OMNI Opportunities for Micronutrient Interventions

micronutrient update

TECHNICAL SERIES

Vitamin A Supplementation

Key Points

Hundreds of millions of women and children throughout the world are affected by vitamin A deficiency (VAD). Xerophthalmia, the term used to describe ocular signs of VAD and the leading cause of blindness among children, is estimated to afflict 10 million children worldwide. Between 250,000 and 500,000 of these children go blind annually. Vitamin A protects children from blindness and even death. Studies show that where xerophthalmia is endemic, improved vitamin A status can reduce child mortality by about 30%. Deficiency is most commonly found within poorer segments of populations where undernutrition and frequent infections are prevalent, and it predominantly affects older infants, young children, and pregnant and lactating women.

There is a range of programmatic options to control and prevent VAD. The choice of strategies should be based on the prevalence and severity of deficiency, the government commitment to addressing the problem, the existing infrastructure and health resources, the cost-effectiveness of interventions and approaches, and the potential for increased production and consumption of vitamin A-rich fruits and vegetables in at-risk areas.

Relevant Experience

In **Nepal**, where VAD is classified as a clinical public health problem, USAID has earmarked funds to assist the Ministry of Health in the National Vitamin A Program. The program provides high-dose vitamin A every six months as a preventive measure in 32 high priority districts, combined with a more sustainable nutrition education strategy to increase the availability and consumption of vitamin A-rich foods. Coverage of children 6-60 months is approximately 86%, and according to previous trials conducted in Nepal, mass vitamin A supplementation campaigns could result in a 30% decrease in childhood deaths. Capsules are distributed in health facilities in all 75 districts throughout the country for treating xerophthalmia. The combination of a universal and targeted approach is proving to be effective in both preventing vitamin A deficiency and reducing child mortality.

The goal of the USAID-funded Vitamin A Expansion (VITEX) Project in the **Philippines** has been to improve the vitamin A status and reduce morbidity of infants and young children. A primary component of the project was the targeted supplementation of underweight children living in three provinces in the country. In 1993, the government with technical assistance from Helen Keller International, adopted a new vitamin A policy to include universal coverage of all preschool children. Supplementation now occurs twice a year -- once on National Immunization Day and a second time on National Micronutrient Day, when iodine capsules are also distributed to pregnant women. The result has been a dramatic increase in vitamin A capsule coverage from 7% in 1991 to 86% in 1994 and, correspondingly, a significant reduction in ocular manifestations of VAD in the VITEX Project area. The OMNI Project supported an evaluation that showed that nationwide supplementation attained a coverage rate for children ages one to six years of 90% in 1993 and 93% in 1994, and USAID/Global estimates that improved vitamin A status will avert approximately 60,000 deaths per year in children six months to four years.

A national survey conducted in **Nicaragua** in 1993 found that 31% of children under five years of age were moderately or severely vitamin A deficient and 29% of children surveyed suffered from iron deficiency anemia. In response, the Ministry of Health took immediate action by launching mass distributions of vitamin A to children and iron supplements to women and children during National Health Rallies held twice a year. Presently, two-thirds of children under ten are receiving vitamin A. A comprehensive five-year National Micronutrient Plan, developed with technical assistance by members of the OMNI Project, was recently established to reduce and control vitamin A, iron, and iodine deficiencies. A primary objective is to integrate vitamin A and iron supplementation into ongoing health activities to increase coverage rates of at-risk populations and ensure sustainability.

Prevention and Control

Vitamin A capsule distribution in areas where clinical deficiency has been determined a public health problem is an expedient approach to improve vitamin A status and control xerophthalmia. Vitamin A supplementation can also diminish the severity of infections, such as diarrhea and complications associated with measles, and more importantly, decrease the risk of mortality. While it is effective as a rapid means to increase vitamin A stores, capsule distribution should be conducted concurrently with education programs and other more sustainable food-based strategies that can ensure adequate provision of vitamin A over the long-term.

Supplementation includes both a preventative and therapeutic approach to: 1) prevent deficiency through periodic dosing of preschool children and mothers immediately following delivery; and 2) treat cases of xerophthalmia or children exhibiting signs of illness that signify an immediate need to improve vitamin A status. Universal capsule distribution is used as a prophylactic measure to reach young children at prescribed intervals (three to six months) and women within eight weeks of delivery in areas where deficiency has been determined to be a public health problem. This approach generally has an immediate effect on the vitamin A status of those who receive a capsule and provides a protective period against developing deficiency. Breastfed children of women who have adequate vitamin A stores also benefit.

Supplements can be administered quickly at a reasonable cost, and depending on existing delivery channels, capsule distribution can be implemented with relative ease. Critical to the success of preventative programs is sustained periodic distribution and high coverage rates of the target population. Schedules for periodic vitamin A distribution should take into account seasonal variation of foods rich in vitamin A and prevalence of childhood illness, the appropriate dose (50,000 IU < 6 months, 100,000 IU 6-11 months, 200,000 IU 12 months and older), local resources, and logistics. Vitamin A supplements are also administered in health facilities for treatment purposes to children showing symptoms of xerophthalmia or infectious diseases associated with deficiency, as well as particularly persistent diarrhea, measles, or severe protein-energy malnutrition. Preschool siblings of xerophthalmic children should be supplemented to reduce the risk of also becoming xeroph-thalmic. The success of targeted delivery systems is contingent on access to and utilization of health services by groups at-risk for developing vitamin A deficiency, and adequate provision of capsules. Quality of service depends on training and supervision of personnel to ensure appropriate dosing and support to address technical problems.

The assurance of an ongoing supply of capsules and reliable distribution systems, all of which requires a financial commitment, is fundamental to any vitamin A supplementation program. UNICEF has an agreement in many countries where VAD exists to supply capsules to governments, and capsules can also be purchased through UNICEF or commercial suppliers by governments, international agencies, and NGOs. The inclusion of vitamin A as an essential drug on lists of routine procurement is the most efficient and cost-effective way to ensure the routine delivery of capsules from central medical stores to communities. Procurement considerations include the size of the target population and the prevalence of xerophthalmia and other childhood illnesses being treated in the program. Monitoring systems to track capsule distribution are essential in identifying problems in the delivery system. Receipt of vitamin A should be recorded in medical records or mother/child clinic cards to promote and track safe and timely delivery of vitamin A supplements.

USAID built much of the scientific platform establishing that micronutrient interventions are effective, affordable, and sustainable and, in particular, the confirmation of vitamin A in saving children's lives. It has been calculated that ensuring adequate vitamin A status in the 15 USAID Joint Programming Countries by supplementation and other means would save the lives of approximately 4.5 million children over the next five years.

Key Sources

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